Energy Interop™ Server & System (EISS™) EISSBox™ 2.0b Local Mode Unit Installation Guide.

IPKeys EISSBox is an OpenADR 2.0b-certified end point that is capable of receiving demand and response (DR) and pricing signals. This document is a guide on how to setup, install and trouble shoot the EISSBox 2.0.
1 – EISSBox Exterior

The EISSBox assembly consists of an enclosure, computer board and relays. The unit may also contain indicator light(s) or buttons on the exterior. Figure 1, seen below.

2 – EISSBox Interior

The computer board and relays, Figure 2 below, are the main components that make up the interior of the EISSBox. The output signals originate from the relays and can be wired for normally open or closed conditions. Connection of the EISSBox to external hardware will be discussed in further detail later in this document.

Figure 1. EISSBox Exterior

Figure 2. EISSBox Interior
3 – Location for your EISSLBox

The EISSLBox is used to provide closure into an Eaton lighting control system. Typically, the unit should be mounted in a dry location near the loads to be controlled. Locations that are exposed to the elements require a different waterproof enclosure.

Note:

- The maximum recommended distance from the EISSLBox to the load is 100 feet.
- A 120 VAC receptacle must be located within four feet of the EISSLBox along with a wired ethernet connection unless a cellular option has been included.

4 – EISSLBox Installation

4.1 – Mounting

Mount the EISSLBox vertically to keep all external wiring below the box and minimize the potential of damage from moisture or dust. It’s best to use self-tapping screws suitable for the surface to which the unit will be mounted. Sheet metal screws are best for metal surfaces and drywall screws for wood or drywall. For secure fastening, insert screws into the upper and lower holes in the box. Once the box has been mounted, then connect it to the loads.

4.2 – Connecting to the Relays

Relays are included in the standard EISSLBox to allow external equipment to receive automated demand response signals. These relays can be used for direct control or to signal other devices. When used for direct control applications, EISSLBox relays are rated up to 250 VAC, 5A (120 VAC, 10A) resistive load.

These relays can be wired in a normally open or closed state. Depending on the choice of wiring, either state can indicate when a demand response event has occurred. For example, if the box is wired to be normally open, then it’s in demand response when the relay is closed and vice versa. The relay on the right marked Relay 0, in Figure 3 below, corresponds to the first asset. The Standard EISSLBox comes with two relays as shown.

![Figure 3. EISSLBox Relays](image-url)
4.3 – Power Up
Plug in the power supply and ethernet cable into the network. Be sure the network allows IP addresses to be assigned via DHCP. The EISSBox uses a request / response method called ‘Poll’ to contact the EISS server to get its configuration parameters and OpenADR2.0 information. This method often doesn’t require any modification to the customer’s network or firewall.

There are three LED lights on the circuit board that can be used to determine the operational state of the EISSBox per Figure 4 below. The red and green status lights next to the ethernet port will light up when power is applied. The red light indicates that there is power and moments later the green light should come on indicating that the single board computer has booted successfully. The small LED light located on the ethernet connector will begin flashing green. This indicates network traffic and a successful connection to the network.

![Figure 4. Circuit Board Indicator Lights](image)

4.4 – Connecting to Various Eaton Lighting Control Systems
The figures below illustrate how to interface the EISSBox to the following lighting control systems:

- Room Controller
- ControlKeeper
- iLumin
- Fifth Light

Note: The connection to the EISSBox relays is dependent on the choice of wiring. To determine this, refer to section 4.2, “Connecting to the Relays.”
Room Controller

Connect Relay 0 to the positive and negative Demand Response terminals on each Room Controller. Up to 100 Room Controllers can be daisy chained together to one EISSBox. When a demand response signal is received, the Room Controller will adjust the lighting levels based on the chosen Demand Response DIP Switch settings. These settings can be adjusted by alternating the position of DIP Switch 1 and 2 as described in figure 5 below.

Figure 5. Room Controller and EISSBox Interface
ControlKeeper

Connect the EISSBox Relay to an available input channel on the ControlKeeper lighting control panel. Any input may be used and programmed. A demand response input can be brought into a single ControlKeeper and broadcast over the lighting control panel network. The demand response command can be programed to turn OFF or dim lighting loads based on the panel type. For more information please consult Eaton’s Lighting Systems Technical Support.

Figure 6. ControlKeeper and EISSBox Interface
iLumin
The EISSBox relay connects to a UIG-2-NA dry contact input and can be programmed to issue a lighting scene, which will set a lighting level. It could even control the local lighting in areas of the building.

Figure 7. iLumin and EISSBox Interface
Figure 8. Fifth Light and EISSBox Interface
4.5 – Connecting an External Opt Out Button

The standard EISSBox has the option for a momentary button to be connected allowing customers to opt out of active events. The momentary normally open button should be wired between the bottom terminal (G) and the top terminal (7) per Figure 9 below.

![Figure 9. Opt Out Button Wire Terminals](image)

5. – LED Indicator

The multicolored LED that is located on the front of the unit (Figure 10 below) is used to determine the status of the EISSBox. It will illuminate once the unit has been assigned to an account. The color of the LED indicates the state of the EISSBox as shown in Figure 10 and the table below.

![Figure 10. Exterior LED Indicator](image)

<table>
<thead>
<tr>
<th>LED Color</th>
<th>Meaning</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>No Events Pending</td>
<td>No Demand Response scheduled</td>
</tr>
<tr>
<td>Red (Solid)</td>
<td>Active Event</td>
<td>Demand Response in effect</td>
</tr>
<tr>
<td>Yellow (Flashing)</td>
<td>Error</td>
<td>Possible issue with settings, software or hardware</td>
</tr>
<tr>
<td>Yellow (Solid)</td>
<td>Pending Event</td>
<td>Demand Response active and pending</td>
</tr>
</tbody>
</table>
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